

(Date signed)

REMOTE CONTROL OF PROGRAM SCHEDULING

FIELD OF THE INVENTION

[0001] The invention relates to the field of electronic programming guides (EPGs). More specifically, the invention relates to providing a remotely controlled electronic programming guide.

BACKGROUND OF THE INVENTION

[0002] An Electronic Programming Guide (EPG) displays information about programs a viewer is currently watching as well as information about other programs on different channels or at different times. The first EPGs were typically displayed on one channel of a cable television system. These early EPGs were simple, displaying short program descriptions and scrolling past the screen at a predetermined rate. Also, these EPGs typically did not allow for user interaction. More recent digital EPGs allow for the user to interact with the programming schedule, and to view programs while scanning the guide. However, digital EPGs still typically rely on the television to display the EPG.

[0003] Currently, EPGs are displayed only on the primary video display, typically a television, itself. This is because a television is usually the most expensive component in a home entertainment system, and further because until recently a television was the only display device in many homes. As a result, the television is used to show both the programs themselves as well as the EPG.

[0004] Typically, an EPG will be displayed in one of two ways. It will either be displayed using the full television screen, completely preempting the programming selection, or the EPG may occupy only a portion of the screen as an overlay, the rest of the screen used to display the current program. Where an EPG only occupies a portion of the screen, however, it may be difficult to read because of the small size of the text, or may not provide much information about the current selection or other programs. Additionally, the main program is interrupted by the overlay.

[0005] This method of displaying programming information can have several other disadvantages as well. When there are several viewers, if one decides to view the EPG, all other viewers must wait until the one using the EPG is finished. This interruption may be quite inconvenient for the other viewers.

[0006] What is needed is a method of displaying programming information that is neither difficult to read, nor disrupts others when there are multiple viewers.

SUMMARY OF THE INVENTION

[0007] The present invention provides a method and apparatus for displaying an electronic programming guide (EPG) on a device other than a primary video display.

[0008] In one embodiment, the EPG may be displayed on a display screen coupled to a computing device, so that one viewer may browse the EPG, while other viewers may continue to watch the currently selected program on the primary display. The computing device may also allow a user to participate in interactive television. Additionally, the user may still display the EPG on the primary display if they so wish.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] The present invention is illustrated by way of example and not limitation in the figures of the accompanying drawings, in which:

[0010] **Figure 1** illustrates an entertainment system with an electronic programming guide displayed on a remote computing device;

[0011] **Figure 2** illustrates an entertainment system with an electronic programming guide displayed on a wireless computing device; and

[0012] **Figure 3** is one example of a computer system according to an embodiment of the present invention.

DETAILED DESCRIPTION

[0013] Applicant claims priority to provisional application serial number 60/215681, filed 6/30/2000.

[0014] One embodiment provides a method and apparatus for displaying an Electronic Programming Guide (EPG) on a display device other than that which displays the program. In the following description, for purposes of explanation, specific details are set forth to provide a thorough understanding of the present invention. However, it will be apparent to one skilled in the art that these specific details are not required in order to practice the present invention.

[0015] An EPG allows a user to perform a range of functions that may be useful when watching television. Commonly assigned U.S. Patent Application Serial No. 09/488,361, filed 01/16/2000, describes in more detail the functions of an EPG and is hereby incorporated by reference.

[0016] The main function of an EPG is to allow a user to view program listings sorted by channel and time. Some EPGs allow a user to browse through the listings, and to get detailed information about specific programs. EPGs may also allow a user to select certain channels or programs in which the user is particularly interested. Additionally, an EPG may control a recording device, and start recording when programs selected by the user are shown.

[0017] The typical television viewer now has many devices that have display screens, such as PCs, PDAs, web phones, etc., in addition to their television. Current EPGs are displayed on the television screen itself. This can lead to problems when there is more

than one viewer, because viewers other than the one operating the EPG may not wish to view the EPG. Problems may also arise when the EPG attempts to display both the guide and a television program at the same time, because either the text may be too small or there may be too little information displayed. New display devices, such as PCs and PDAs give the user the opportunity to view the programming guide on an second screen, eliminating the problems associated with displaying an EPG and programs on the same screen.

[0018] Figure 1 illustrates an apparatus for displaying an EPG on a display other than the primary display according to one embodiment. Entertainment system 100 is an exemplary entertainment system which allows a user to watch television, record television programs, and perform various other functions.

[0019] As shown, entertainment system 100 includes a television or other video display 105, a set-top box (STB) 110, a digital or other recording device 115, and a remote control device 120.

[0020] Video display 105 can be a television, plasma screen, liquid crystal display (LCD) or any other device capable of interpreting and displaying signals sent by set top box 110 (STB). STB 110 is receives and descrambles cable television and other signals, allows for interaction with the viewer, and transmits the resulting signals to video display 105. Recording device 115 may be any one of or a combination of any one of a number of devices including video cassette recorders (VCRs), hard drives, digital versatile disc – random access memory (DVD-RAM) recorders, etc. Video display 105, STB 110 and recording device 115 may also be combined in any fashion.

[0021] Set top box (STB) 110 can receive signals from network 125 through network connection 130. It can also receive information from link 130a to video display 105 and recording device 115. Remote control device 120 is capable of controlling the functions of the various components of entertainment system 100 using infrared or other transmission means.

[0022] Network 125 may consist of a single network or a group of networks such as the Internet. Network connection 130 can deliver signals to STB 110 over a local area network (LAN), a wide area network (WAN), satellite broadcast, or other data transmission means. Network connection 130 can deliver analog, digital or HDTV signals, or any combination thereof. Network connection 130 may also allow unidirectional or bi-directional Internet access.

[0023] In one embodiment, network 125 would comprise a single high-bandwidth digital network that allows both digital video streams and Internet access as well as other services to run on the same network. In another embodiment, the network connection 130 would comprise fiber optic cable, although it is clear that any technique of connecting the network may be employed.

[0024] Although only a single network cloud 125 is shown in Figure 1, in other embodiments, any number of different types information providers and network connections may be utilized. For example, broadcast server 135 has programs which can be viewed using entertainment system 100. Broadcast server 135 delivers information to network 125 through network link 140, and eventually to STB 110.

[0025] Computing device 150 is coupled with network 125 through network link 152. Computing device 150 may also be coupled with set top box 110 via network link 154.

Because set top box 110 has its own network connection 130, it is also possible to forgo network connection 152 and route network access for computing device 150 through set top box 110.

[0026] Computing device 150 comprises a computer 156, a display screen 158, an input device 160, and connections 162a and 162b. Computer 156 may be any device, such as a Personal Computer (PC), a Personal Digital Assistant (PDA), or a web phone, capable of processing commands necessary to display output on display screen 158. Display screen 158 may be a computer monitor or an LCD screen, or any other device capable of displaying the output of computer 156.

[0027] Input device 160 may be a keyboard, mouse, joystick, writing tablet, or any other means of inputting data into computer 156. The components of computer 156 communicate with each other through connections 162a and 162b, although any number of additional connections may be added for additional peripherals and for additional connections between the already enumerated components.

[0028] As shown in Figure 1, computing device 150 is simplified for purposes of explanation. Any number of additional components may be added to computing device 150 beyond those necessary for use with the invention.

[0029] As shown in Figure 1, it is possible for several people to watch programming on video display 105 while one or more other persons uses computing device 150 to view an EPG on display screen 158. As a result, the programming displayed on video display 105 is undisturbed, and those perusing an EPG using computing device 150 can do so at their leisure. Also, because the EPG is shown on computing device 150, it is more easily customized and can be seen more clearly.

[0030] Input device 160 can be used to select programs to be watched on video display 105, or to otherwise browse through the EPG. In addition, a cable television provider sending programming to set top box 110 may have preset selections to send to computing device 150. A user may also use input device 160 to make viewing selections, preprogram reminders for viewing selections, program recording events, or perform any other function typical of Electronic Programming Guides (EPGs).

[0031] Recording device 115 can also be configured through the EPG to start recording slightly before a program is scheduled to begin and to end recording slightly after a program is scheduled to end in order to compensate for scheduling inaccuracies. A server, such as broadcast server 135 may also control these functions.

[0032] STB 110 may also provide for interactive functions such as online shopping, contests, games, chat, etc. Either input device 160 or remote control device 120 can be used to create input for the interactive functions of STB 110.

[0033] A user of the EPG displayed on computing device 105 may also, through input device 160, display portions of or the entire EPG on video display 105. This way, it is possible that a user may share programming information with all viewers, and thus the invention retains all of the benefits of previous EPGs displayed on a television. This also allows those who have poor vision, or are otherwise unable to use display screen 158, to use the EPG.

[0034] In another embodiment, an EPG could be displayed on a portable computing device. Figure 2 illustrates an exemplary entertainment system with an EPG displayed on a wireless computing device.

[0035] Set top box (STB) 205 has an integrated antenna 210, which transmits RF waves 215. RF waves 215 can be received by hand held unit 220 through antenna 225. Hand held unit 220, could, for example, be a personal digital assistant (PDA). Hand held unit 220 could be equipped with a wireless interface such as Bluetooth™ to communicate with STB 205.

[0036] A wireless hand held device, such as hand held unit 220 allows for a great deal of flexibility. A user may move about the room which contains video display 105 and be able to control the functions of the EPG from any point. When using a wireless hand held device to control the EPG, the device may also assume the functions of remote control device 120.

[0037] Figure 2 also shows a satellite receiver 235 connected with network 125 through network connection 240. Satellite receiver 235 can receive satellite signals, in addition to those already transmitted through the network from, e.g., broadcast server 135. Any one of a number of methods of transmitting signals to STB 205 may be employed.

[0038] The system and method described herein may be integrated into advanced Internet-or network-based knowledge systems as related to information retrieval, information extraction, and question and answer systems. Figure 3 is an example of one embodiment of a computer system 300. The system shown has a processor 301 coupled to a bus 302. Also shown coupled to the bus 302 is a memory 303 which may contain instructions to perform the method described herein. Additional components shown coupled to the bus 302 are a storage device 305 (such as a hard drive, floppy drive, CD-ROM, DVD-ROM, etc.), an input device 306 (such as a keyboard, mouse, light pen,

barcode reader, scanner, microphone, joystick, etc.), and an output device 307 (such as a printer, monitor, speakers, etc.). Of course, an exemplary computer system could have more components than these or a subset of the components listed.

[0039] The system and method described herein may be stored in the memory of a computer system (i.e., a set-top box) as a set of instructions to be executed, as shown by way of example in Figure 3. In addition, the instructions to perform the system and method described herein may alternatively be stored on other forms of machine-readable media, including magnetic and optical disks. For example, the system and method of the present invention may be stored on machine-readable media, such as magnetic disks or optical disks, which are accessible via a disk drive (or computer-readable medium drive). Further, the instructions may be downloaded into a computing device over a data network in the form of a compiled and linked version.

[0040] Alternatively, the logic to perform the system and method described herein may be implemented in additional computer and/or machine-readable media such as discrete hardware components as large-scale integrated circuits (LSI's), application specific integrated circuits (ASIC's), firmware such as electrically erasable programmable read-only memory (EEPROM's), and electrical, optical, acoustical, and other forms of propagated signals (e.g., carrier waves, infrared signals, digital signals, etc.).

[0041] Although the foregoing description and accompanying figures discuss and illustrate specific embodiments, it should be appreciated that the present invention is to be measured only in terms of the claims that follow.